



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Hongyong Zhang  
Serial No. : 09/362,808  
Filed : July 28, 1999  
Title : METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Art Unit : 2814  
Examiner : Shrinivas H. Rao  
Confirmation No.: 7320

**Mail Stop Amendment**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REPLY TO ACTION OF OCTOBER 4, 2004**

Applicant submits the following remarks in reply to the office action mailed October 4, 2004.

Claims 1-40 are pending in this application, with claims 1, 6, 10, 14, 19 and 24 being independent. Applicant acknowledges with appreciation the Examiner's allowance of claims 1-13.

Claims 14-18, 33 and 34 have been rejected as being unpatentable over Fu in view of Sasaki and Lin. Initially, applicant believes that the rejection of claims 33 and 34 is in error, as these claims depend from allowed claim 6.

With respect to independent claim 14 and its dependent claims 15-18, applicant requests reconsideration and withdrawal of this rejection because neither Fu, Sasaki, Lin, nor any combination of the three describes or suggests first and second interlayer insulating films including a contact hole formed such that a taper angle  $\beta$  of an inner surface of the second interlayer insulating film in the contact hole with respect to a major surface of the semiconductor layer is larger than a taper angle  $\alpha$  of an inner surface of the first interlayer insulating film in the contact hole with respect to the major surface of the semiconductor layer, as recited in claim 14.

Recognizing that Fu and Sasaki do not disclose such an arrangement, the Examiner turns to Lin. With respect to Lin, the Examiner asserts that Fig. 7 of Lin shows that the second buffer layer 22 is etched faster than the first buffer layer 20, and that Lin teaches that "the higher etching rate of an insulating film will produce an angle larger than the angle of another insulating film that has lower etching rate." Applicant has reviewed Lin and, while applicant agrees that Lin teaches that the second buffer layer 22 has a faster etch rate than the first buffer layer 20,

applicant has found no indication in Lin that this will result in a larger taper angle in the second buffer layer 22. Indeed, Fig. 7 of Lin appears to show that the layers 20 and 22 have the same taper angle. Accordingly, for at least these reasons, applicant requests reconsideration and withdrawal of the rejection of claims 14-18. In the event that the Examiner chooses to maintain this rejection, applicant asks that the Examiner provide an explanation of where Lin provides the teaching in question.

Claims 19-30 and 35-37, including independent claims 19 and 24, have been rejected as being unpatentable over Fu in view of Sasaki, Lin and Huang. Initially, applicant notes that this rejection appears to be incomplete in that the paragraph beginning at the bottom of page 5 is not completed on page 6.

With respect to claim 19 and its dependent claims, and for reasons similar to those discussed above with respect to claim 14, the combination of Fu, Sasaki and Lin does not describe or suggest a contact hole in which "angles of the tapered section of the contact hole decrease successively from the second interlayer insulating film toward the first interlayer insulating film," as recited in claim 19. As Huang does not remedy this failure of the primary references, applicant requests reconsideration and withdrawal of the rejection of claim 19 and its dependent claims.

With respect to claim 24 and its dependent claims, applicant requests reconsideration and withdrawal of the rejection because, even assuming for sake of argument that the four references show every element of the claim, there would have been no motivation to pick and choose aspects of the references for combination in order to reach the claimed subject matter. In the event that the Examiner chooses to maintain this rejection, applicant requests that the Examiner identify the portions of the cited references that are believed to correspond to the elements of the claim, and indicate why one of skill in the art would have been motivated to combine the references to reach the claimed subject matter.

Applicant submits that all claims are in condition for allowance.

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Attorney's Docket No.: 07977-088002 / US3155D1

No fees are believed to be due. Please apply any charges or credits to deposit  
account 06-1050.

Respectfully submitted,

Date: January 4, 2005

  
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